BOOK REVIEW

INTRODUCTION TO PHYSICAL CHEMISTRY, VOL. III. by S. N. Mukherjee Art Union, Calcutta. 832 pages, ix. 1960(?) Price Rs. 25/-.

The third volume of Introduction to Physical Chemistry by Prof. S. N. Mukherjee, is intended for the post-graduate students of Indian universities. It is an advanced treatise divided into eleven chapters dealing with kinetic theory of gases, chemical thermodynamics, quantum theory and quantum mechanics, statistical mechanics and structure of molecules. In a book like this where a variety of topics has to be treated it is probably not easy to maintain a balance in the matter of emphasis given to one topic or the other. However, this volume is to be read along with its companion volumes, particularly volume II. Together with the preparatory chapter on electromagnetism more than two-fifths of the book are devoted to quantum theory and quantum mechanics. But the section on the theory of electrolytes has been very meagrely treated without reference to its recent developments. The same remark applies to the theory of reaction rates. It is gratifying that most of the topics have been presented clearly without sacrificing rigour and accuracy. The author's long experience as a teacher of physical chemistry has naturally helped him to keep the conceptual difficulties of students in mind.

The book is not, however, free from drawbacks. Some of them the reviewer would like to point out here hoping that they may be given consideration while preparing a future edition of it.

The chapters on electromagnetism and on relativistic mechanics, particularly the former, could be reduced in size to the necessary minimum. Quite a number of topics in the chapters on chemical thermodynamics, structure of molecules, and even in the most exhaustively treated chapters on quantum theory and quantum mechanics have been dealt with too briefly. The author has given on several occasions alternative derivations of certain formulae. Some of them are no doubt instructive but become too discursive in an advanced treatise like this. What the author could have done was to prepare suitable problems at the end of each chapter based on these alternative deductions. In fact, this is a valid complaint of the reviewer that the author has not thought it necessary to incorporate a large number of problems including numerical ones as he did in earlier volumes of this treatise. In this way some portions of the book could go in the form of problems thus reducing its bulk to a reasonable size. Again in some of the deductions the number of steps written could easily be curtailed. Similar types of deductions have also been unnecessarily repeated. Portions of the book

dealing with mathematical operations proper, viz., algebra of operators, polynomials, etc., could have gone as appendices.

As written, the book has emphasised more fully on the theoretical aspects, derivation of equations, etc., but the experimental side could have been developed a little further.

A number of authors have been mentioned by name and their work has also been described, but there is hardly any reference, except in a few cases, to books or journals where the work referred to may be read in greater detail and in original.

Printing mistakes abound but except in a few instances none of them are particularly harmful.

Although the number of lines written in connection with the drawbacks have exceeded those written in its appreciation the reviewer must admit that he has enjoyed reading some of the chapters, and it is hoped that the teachers and students alike will find the book useful to them.

S. K. M.